

NAUCORIDAE (HETEROPTERA) OF NEW GUINEA. III.  
A REVIEW OF THE GENUS *TANYCRICOS* LA RIVERS,  
WITH THE DESCRIPTION OF A NEW SPECIES

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*Abstract.*—The genus *Tanytricos* La Rivers is reviewed based on recent collections from Papua New Guinea. A new species, *T. froeschneri*, is described, and a new key to species is provided, accompanied by illustrations of the male and female genital structures and abdominal tergites.

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The genus *Tanytricos*, endemic to the mountains of New Guinea, was originally proposed by La Rivers (1971) to hold four species: *T. acumentum*, *T. binarius*, *T. longiceps*, and *T. usingeri*. Although La Rivers provided a key to his species, he employed highly variable external characters, notably the dentation on the ventral keel of the head, and provided few useful illustrations. During our recent collecting in Papua New Guinea, supported through a grant from the National Geographic Society, we obtained large numbers of *Tanytricos*, including examples of a new species, *T. froeschneri*, described herein. A search for additional characters useful in species separation revealed that the male left parameres were distinct and diagnostic, as were the structure of the female subgenital plate and the shapes of the posterior abdominal tergites in both sexes. All of these structures are illustrated, accompanied by a new key to species.

*Tanytricos* species are the largest naucorids found in New Guinea and form a major component of the benthic fauna in cold, rushing mountain streams above 1,500 meters elevation. Their preferred habitat is under large stones in swiftly flowing waters, where they may often be present in extremely high densities, representing the most common invertebrate predators. Individuals were observed preying on aquatic Lepidoptera larvae and were also frequently taken with immatures of a large predaceous baetid mayfly, although they were not observed feeding on the latter. In the Bulolo River at Wau teneral individuals were taken near shore in relatively slack water among cobbles, suggesting that the insects may leave their midstream habitats to molt.

*Tanytricos*, which was included by La Rivers (1971) in the subfamily Cheirochelinae, shares certain head characters, such as the projecting anteclypeus and posteriorly produced vertex, typical of that group. However, this genus and the closely related *Idiocarus* Montandon, exhibit clear differences from the Asian genera held in this subfamily, including slender filiform antennae, asymmetrical male parameres, a well-developed labrum, and ovate pressure receptors on the thoracic venter. The New Guinean naucorid fauna is entirely endemic and, with the exception of *Aphelocheirus pallens* Horvath, appears to have radiated from a single stock. It is most closely allied to the fauna of the Philippines, but lacks many Asian elements, notably

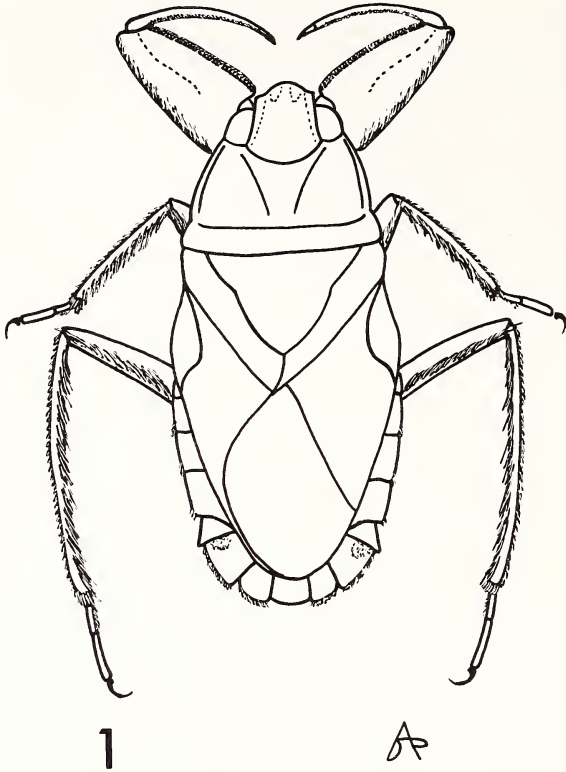


Fig. 1. *Tanycricos froeschneri* ♂, dorsal habitus.

Laccocorinae, present in that archipelago. Cheirocheline naucorids are unknown from either Celebes or the Greater Sunda islands, and further collecting in these regions will be necessary before the zoogeography and dispersal of the group, and the historical origins of the New Guinean fauna, can be accurately assessed.

All measurements and proportions are given in millimeters. CL numbers are codes referring to the authors' ecological notes. Specimen depository abbreviations are as indicated in the acknowledgments.

KEY TO THE SPECIES OF *Tanycricos* LA RIVERS

*Note.* When determining the number of a given abdominal tergite, count backward from the first visible tergite anteriorly. In most Naucoridae the actual tergite I is hidden beneath the metathorax.

- 1. Females with left posterolateral angle of abdominal tergite V, as viewed from above, distinctly produced and asymmetrical (Figs. 7, 8), posterolateral angles of abdominal tergite VI not spinose, males with lateral projections of abdominal tergite VI extending beyond lateral margins of corresponding paratergite when viewed from below . . . . . 2
- Females lacking strong asymmetry on abdominal tergite V; if weak asymmetry present,

- then posterolateral angles of tergite VI spinose (Figs. 9–11); males with lateral projections of abdominal tergite VI not exceeding lateral margins of corresponding paratergite when viewed from below ..... 3
2. Anterior margin of anteclypeus distinctly sinuate, with weak indentations present on either side of apex; middle tibia with erect slender spines present on inner face; medial hump on male abdominal tergite VI not indented apically (Fig. 12); male left paramere becoming very slender distally (Fig. 12); female abdominal tergite V strongly asymmetrical (Fig 7); female subgenital plate bifurcate for half its length, bifurcation narrowing basally (Fig. 17) ..... *acumentum* La Rivers
- Anterior margin of anteclypeus evenly rounded, lacking indentations; middle tibia without erect spines on inner face; medial hump on male abdominal tergite VI indented apically (Fig. 13); male left paramere blunt, not extremely slender distally (Fig. 3); female abdominal tergite V clearly asymmetrical (Fig. 8); female subgenital plate bifurcate for two thirds its length, bifurcation widening basally (Fig. 18) *binarius* La Rivers
3. Females with posterolateral angles of abdominal tergite V produced, acute (Figs. 10, 11), males with lateral projections of abdominal tergite VI rounded (Figs. 15, 16); overall length 16 mm or less ..... 4
- Females with posterolateral angles of abdominal tergite V not produced (Fig. 9); males with lateral processes on abdominal tergite VI squared off (Fig. 14); overall form very large and robust, length exceeding 17 mm; male left paramere tapering, tip rounded (Fig. 4); female subgenital plate bifurcate for half its length, narrowing markedly toward apex (Fig. 19) ..... *usingeri* La Rivers
4. Posterolateral angles of female abdominal tergite VI acute, pointed (Fig. 10); males with distinct hump medially on posterior margin of abdominal tergite VI (Fig. 15); male left paramere acuminate distally (Fig. 5); female subgenital plate tapering evenly from base to apex, with basally widened bifurcation (Fig. 20) ..... *longiceps* La Rivers
- Posterolateral angles of female abdominal tergite VI rounded (Fig. 11), males lacking medial hump on posterior margin of abdominal tergite VI (Fig. 16); male left paramere broad, blunt, not acuminate distally (Fig. 6); female subgenital plate narrowing markedly on apical half, lacking basally widened bifurcation (Fig. 21) ..... *froeschneri*, new species

*Tanycricos acumentum* La Rivers

Figs. 2, 7, 12, 17

*Tanycricos acumentum* La Rivers, 1971, 2:5.

*Diagnosis.* This species of slender habitus can be recognized by the pronounced asymmetry of the female abdominal tergite I (Fig. 7) and the distinctive male left clasper. It is superficially similar to *T. binarius* but can be readily separated from that species by the sinuate anterior margin of the anteclypeus, which bears indentations on either side of the apex.

*Discussion.* This species was described from a series of specimens taken by the Netherlands New Guinea Expedition at “Juliana Bivak,” a camp below Juliana Top, the highest peak in the Star Range in what is now the Indonesian province of Irian Jaya. We have examined the holotype, a brachypterous female, and the allotype, a brachypterous male, along with three paratypes, a brachypterous female, a macroppterous female, and a brachypterous male, all housed at Leiden.

*T. acumentum* is widely distributed in the central highlands of New Guinea along the Wahgi-Sepik divide and west into the highlands of the Trans-Fly Region. Near Mt. Hagen it was the most common species encountered in the mountain streams.

We have seen no examples of this species from the eastern third of the island, including the Markham River drainage and the Owen Stanley Range, where a variety of other congeners appears to replace it. A specimen at hand from Mendi bears the note "trout stomach contents," indicating that this species may provide a food source for these introduced fish.

*Material examined.* INDONESIA. **Irian Jaya:** 2♂♂, 3♀♀, Juliana Bivak, Star Mountains, 1,800 m, IX-10-59, Netherlands New Guinea Expedition (type series, RNHL). PAPUA NEW GUINEA. **Western Highlands Province:** 11♂♂, 3♀♀, upper Kaugel River, nr. Alkena, IX-7-83, CL 1786; 5♂♂, 10♀♀, Abugla River at Tambul, IX-7-83, CL 1788; 9♂♂, 8♀♀, 8 nymphs, Pindu River nr. Alkena, IX-7-83, CL 1785; ♀, stream nr. Kiripia, IX-7-83, CL 1787; 2♂♂, ♀, 1 nymph, upper Lai River, 15 km W of Wabag Mendi Rd jct., IX-7-83; CL 1789; 3♂♂, stream 25 km W of Mt. Hagen on E side Murmur Pass, IX-7-83; ♂, ♀, stream 17 km N of Mt. Hagen on Baiyer River Rd, IX-6-83, CL 1780 (all of the above collected by J. T. and D. A. Polhemus, in JTPC). **Southern Highlands Province:** ♂, Mangani River at Mendi, IX-12-70, trout stomach contents (BPIK). **Eastern Highlands Province:** 17♂♂, 15♀♀, Goroka, VI-30-69, I. La Rivers (CAS).

*Tanyricos binarius* La Rivers

Figs. 3, 8, 13

*Tanyricos binarius* La Rivers, 1971, 2:8.

*Diagnosis.* This species is the smallest in the genus, with an overall length of approximately 12 mm, and can be distinguished by its size, the medial indentation on abdominal tergite VI in males (Fig. 13), the asymmetrical abdominal tergite V in females (Fig. 8), the distinctive male left paramere (Fig. 3), and the female subgenital plate with a bifurcation widening basally (Fig. 18).

*Discussion.* This species, described from the Herzog Mountains of Morobe Province in eastern Papua New Guinea, is extremely uncommon in collections. We have examined the type, a brachypterous female housed in the British Museum, and two paratypes, a brachypterous female and a macropterous male in the California Academy of Sciences. Although La Rivers (1971) stated that all known specimens are brachypterous, the one male paratype has fully developed wings.

All specimens of *T. binarius* we have seen came from localities lying at over 1,200 m. The scant records indicate that this species may be widely distributed in the central ranges, but rarely collected due to its occurrence at higher elevations.

*Material examined.* PAPUA NEW GUINEA. **Morobe Prov.:** ♂, 2♀♀, Vagau (Wagau), Herzog Mountains, 1,219 m, January 4-17, 1965, Stn. #147, M. E. Bacchus (type series, BMNH, CAS). **Madang Prov.:** ♂, Mt. Wilhelm, X-14-57, J. H. Barrett (DPIK).

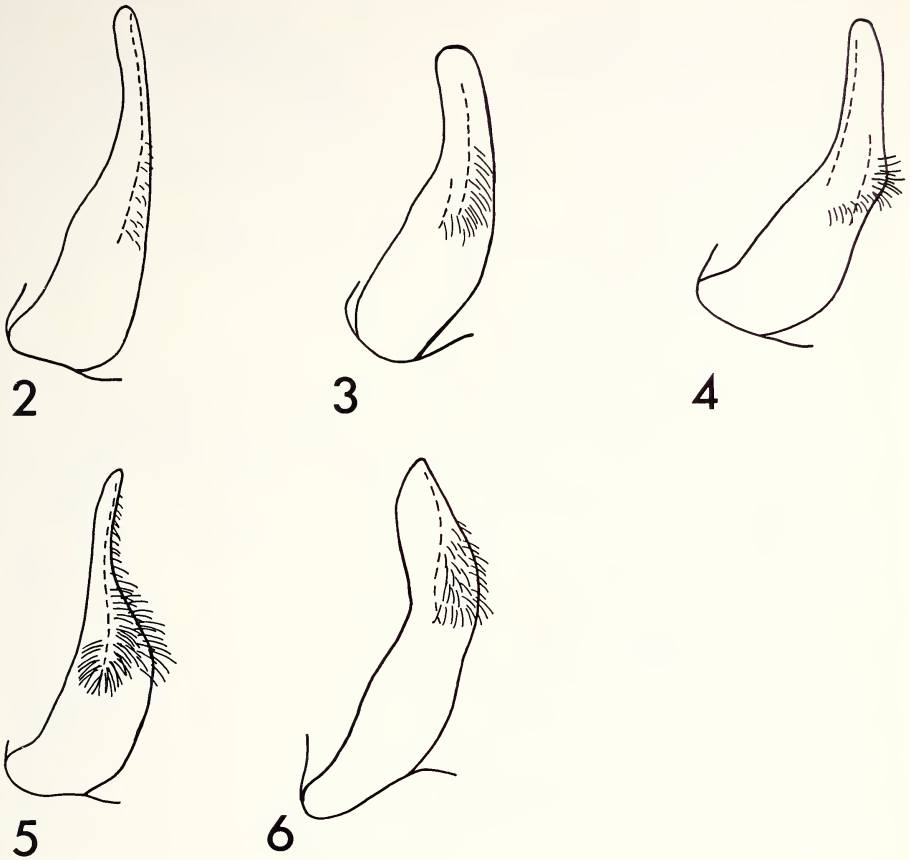
*Tanyricos usingeri* La Rivers

Figs. 4, 9, 14, 19

*Tanyricos usingeri* La Rivers, 1971, 2:13.

*Diagnosis.* This massive species, the largest in the genus, can be recognized immediately by its broad, robust habitus, the squared lateral projections on abdominal





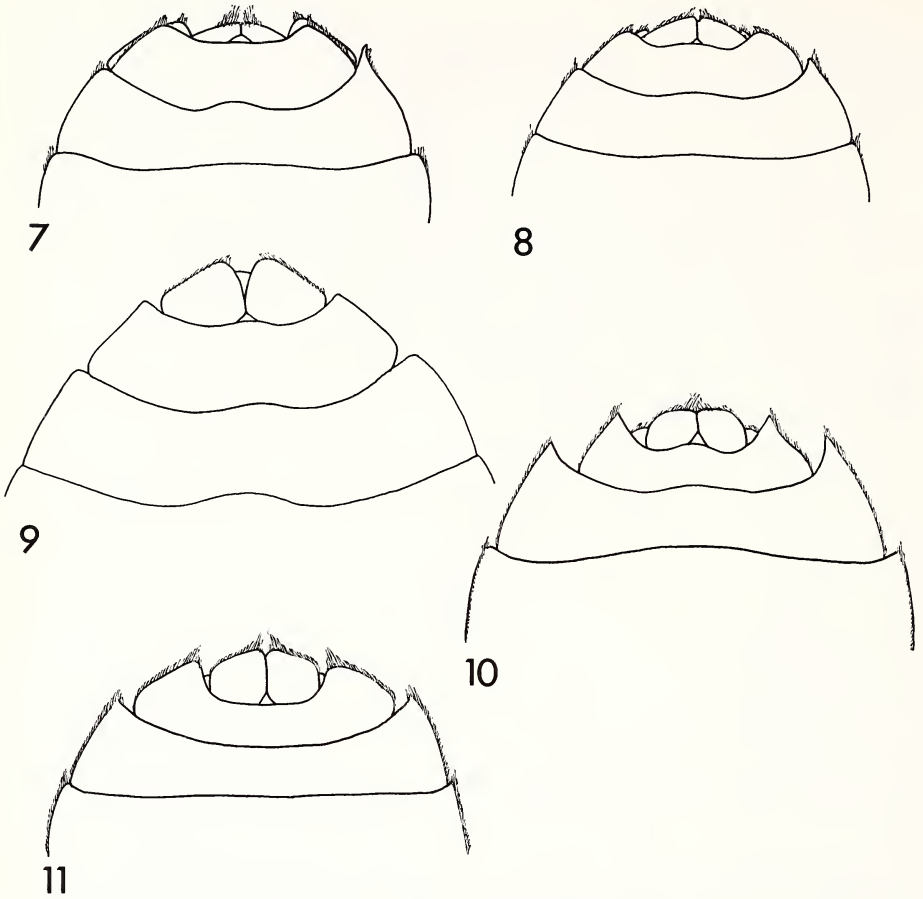
Figs. 2-6. *Tanycricos* species, male left parameres. 2. *acumentum*. 3. *binarius*. 4. *usingeri*. 5. *longiceps*. 6. *froeschneri*.

tergite VI in males (Fig. 14), the nonspinose and symmetrical abdominal tergite V in females (Fig. 9), the distinctive male left paramere (Fig. 4), and the form of female subgenital plate (Fig. 19).

*Discussion.* A macropterous female specimen in the British Museum bears a La Rivers label reading "*Tanycricos magnus* Paratype"; this is a manuscript name and has no validity.

*T. usingeri* is widely distributed in the central mountains, from the Purari drainage eastward to the Owen Stanley Range. We have no records from the upper Fly system or westward into Irian Jaya.

*Material examined.* PAPUA NEW GUINEA. **Western Highlands Prov.:** 6♂♂, 2♀♀, 11 nymphs, stream 27 km N of Mt. Hagen on Baiyer River Rd, IX 6-83, CL 1780; **Morobe Prov.:** 4♂♂, 5♀♀, Kauli Creek, nr. Wau, IX-17-83, CL 1826; ♂, ♀, Clearwater Creek, nr. Wau, IX-16-83, CL 1818; 6♂♂, 3♀♀, 4 nymphs, Bulolo River at Wau, 899 m (1,950 ft), IX-16-83, CL 1815; 4♂♂, 2♀♀ 2 nymphs, Big Wau Creek at Wau, 1,036 m (3,400 ft), IX-16-83, CL 1819; ♂, Wampit River, 10.7 km N of Mumeng on Wau



Figs. 7-11. *Tanyricos* species, female abdominal tergites V-VII. 7. *acumentum*. 8. *binarius*. 9. *usingeri*. 10. *longiceps*. 11. *froeschneri*.

Rd, IX-19-83, CL 1833 (all above collected by J. T. and D. A. Polhemus, in JTPC); 2♂♂, Bulolo River, 8 mi downstream of jct. with Karinga Creek, NW of Wau, 853 m (2,800 ft), X-12-64, W. L. and J. G. Peters (LACM). **Northern Province:** ♀, Kokoda, 366 m (1,200 ft), IX-33, L. E. Cheesman (BMNH).

*Tanyricos longiceps* La Rivers

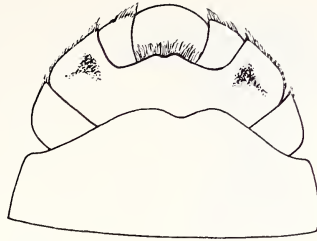
Figs. 5, 10, 15, 20

*Tanyricos longiceps* La Rivers, 1971, 2:10.

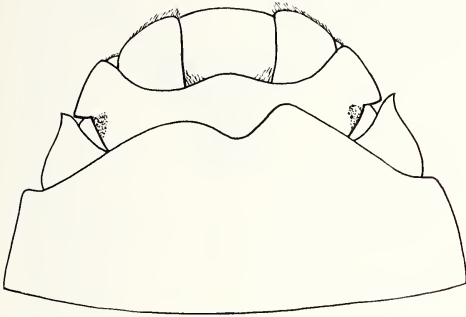
**Diagnosis.** *T. longiceps* has a slender form with a jagged aspect posteriorly, and can be recognized by the shape of abdominal tergite VI in males, with a pronounced medial hump and two blunt, tapering lateral processes (Fig. 15), the spinose posterolateral angles of abdominal tergites V and VI in females (Fig. 10), the extremely



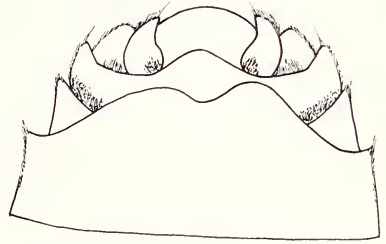
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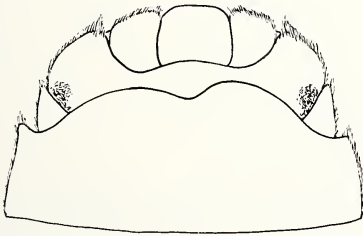
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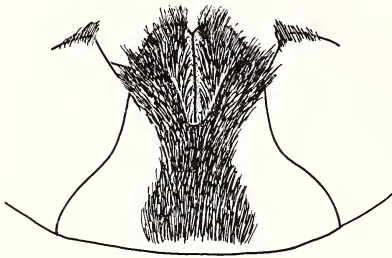


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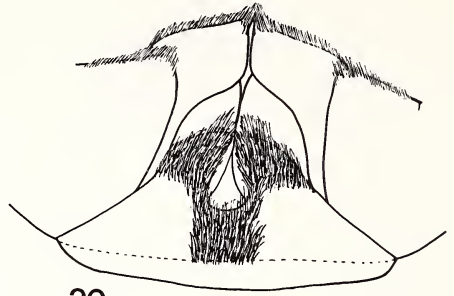
Figs. 12–16. *Tanycricos* species, male abdominal tergites V–VII. 12. *acumentum*. 13. *binarius*. 14. *usingeri*. 15. *longiceps*. 16. *froeschneri*.

slender male left paramere (Fig. 5), and the evenly tapering female subgenital plate (Fig. 20).

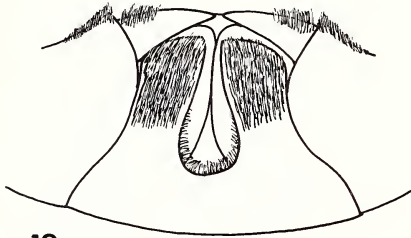
*Discussion.* We have examined the holotype (macropterous female) and allotype (macropterous male) housed in the Bishop Museum, which were taken at light at Aiyura, in the Eastern Highlands Province of Papua New Guinea. La Rivers (1971)



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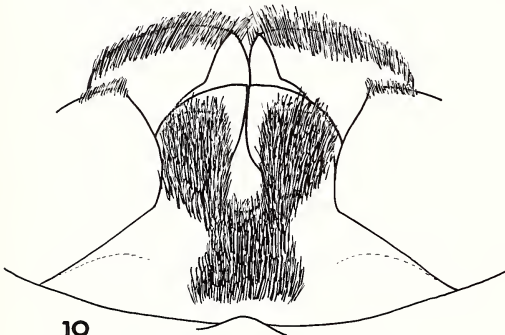
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Figs. 17–21. *Tanicricos* species, female subgenital plates. 17. *acumentum*. 18. *binarius*. 19. *usingeri*. 20. *longiceps*. 21. *froeschneri*.

speculated that since all the specimens at hand were winged the brachypterous form might not exist, but we have brachypterous specimens from the Bulolo River at Wau.

We have seen specimens of *T. longiceps* only from the upper Markham and Ramu drainages. Our experience indicates that this species is very local and prefers habitats in slower currents compared with its congeners. In the Bulolo River at Wau *T. longiceps* was sympatric with *T. usingeri*, but the latter occurred in midstream in areas of swift current, whereas the former was found near shore in more slowly flowing areas.



*Material examined.* PAPUA NEW GUINEA. **Eastern Highlands Province:** ♂, ♀, Aiyura, 1,620 m (5,313 ft), October 19–24, 1959, at light, T. C. Maa (types, BPBM). **Morobe Province:** 14♂♂, 5♀♀, Bulolo River at Wau, 899 m (1,950 ft), November 16, 1983, CL 1815, J. T. and D. A. Polhemus (JTPC); 4♂♂, 3♀♀, same locality, October 25, 1964, W. L. and J. G. Peters (LACM, JTPC); 2♂♂, ♀, Bulolo River, 8 mi downstream of jct. with Karinga Creek, NW of Wau, 853 m (2,800 ft), October 12, 1964, W. L. and J. G. Peters (LACM); ♀, Big Wau Creek at Wau, 1,036 m (3,400 ft), October 10, 1964, W. L. and J. G. Peters (LACM); ♂, Mt. Missim, 870 m (2,853 ft), December 1, 1969, J. Sedlacek (JTPC).

***Tanycricos froeschneri*, new species**

Figs. 1, 6, 11, 16, 21

*Diagnosis.* *Tanycricos froeschneri* is superficially similar to *T. longiceps* La Rivers, but can be recognized by its thickened, gently curving male left paramere (Fig. 6), the female subgenital plate with a bifurcation that narrows basally (Fig. 21), and the structure of the male and female abdominal tergites (Figs. 10, 15), as described in the key.

*Description.* Macropterous form: Large, elongate (Fig. 1), basic coloration yellowish brown shaded with fuscous and black. Male length 13.63; maximum width (across abdomen) 6.34; female length 13.82; maximum width (across abdomen) 6.82; males shorter and narrower, with abdomen less expanded posteriorly.

Head yellowish brown, darker medially, adjoining lateral margins, and at base of anteclypeus, width/length = 3.18/1.73; eyes brown, shining, rounded, protrusive, convergent anteriorly, posterior/anterior interocular width = 2.27/1.82, separated from vertex by deep furrows; anteclypeus with a pair of depressions basally to either side of midline, anterior margin with slight indentations on either side of apex, greatly produced, projecting far over base of labrum, labrum subtriangular, rounded, yellowish, maxillary plates well developed, horizontally oriented, anterior margins upturned vertically along margin of rostral cavity; antennae slender, yellowish, tip of segment IV barely exceeding lateral eye margin; vertex well produced posteriorly behind eyes, margin evenly rounded.

Pronotum yellowish brown, mottled with darker brown, depressed medially behind vertex of head, width/length (midline) 5.05/2.02, lateral margins sinuate, weakly explanate, posterior margin delineated by a deep furrow, anterolateral angles sharp, pointed. Scutellum dark brown to black, width/length (midline) 3.54/2.27, lateral margins weakly sinuate. Wings fully developed, extending to posterior margin of abdominal segment VI, embolium, clavus, and corium well defined, surface set with fine granular microstructure, coloration blackish brown, with yellowish areas basally and adjoining membrane on corium, along lateral embolar margins, and at claval suture; membrane black, shining, venation obscure, surface set with fine granular microstructure.

Abdomen with lateral portions of segments I–VII exposed, brown, segments VI and VII yellowish; lateral margins of all segments fringed with short, stiff, gold setae and long, fine, recumbent, gold setae; posterolateral angles of tergite V in female produced (Fig. 11); posterolateral angles of tergite IV in male projecting well beyond lateral margins of tergite VI, tergite VI with lateral processes rounded, lacking a large medial hump (Fig. 16).

Ventral surface brown, head and medial portions of thoracic plates with covering of long, shining, recumbent, gold setae; head with prominent medial keel bearing small pointed teeth at both ends, prosternum with distinct medial carina, produced into an erect vertical keel anteriorly; proepimeron bearing elongate golden sense organ set inside lateral margin behind anterolateral angle, mesosternal plate lacking a medial carina, anterior margin not reflexed, covered with fine, golden, hydrofuge pile, lateral portions bare; mesepimeron, metasternum, and metepimeron bare, lacking hydrofuge pile; abdominal paraterites I–VI with scattered glabrous depressions in the hair pile, 1–6 per segment, consisting of a large ovate depression near inner margin, several smaller depressions adjoining spiracle, and a small depression near anterolateral margin, spiracles marked by slightly raised hair clumps, roughly ovate patches of differently reflecting hairs present laterally outside spiracles. Legs yellowish brown, posterior femora and tibiae darker; anterior femora dotted with brown dorsally, posterior margin defined by a dark tuberculate ridge set with long golden setae, anterior margin black, set with thick fringe of short gold setae; anterior tibia slender, gently curving, bearing single tarsal segment and claw; middle and posterior coxae with single raised dark tubercle apically; middle and posterior femora with paired longitudinal rows of short dark tubercles along posterior margins; middle and posterior tibiae thickly set with short reddish spines, five to six transverse rows of stout spines present apically; middle tibia bearing a longitudinal row of about seven long, slender, erect spines along inner face; middle and posterior femora, tibiae, and tarsi set with long, golden swimming hairs; claws yellowish, sharply bent, tips black, parempodia setiform.

Female subgenital plate trapezoidal, narrowing rapidly on apical half, deeply and broadly cleft for half its length, bifurcation narrowing basally (Fig. 21); male parameres asymmetrical, left paramere gently curving, broad, blunt (Fig. 6).

Brachypterous form: Similar to macropterous form in general size, structure, and coloration, with following exceptions: coloration lighter, more yellowish, especially on abdomen and hemelytra; pronotum less massive, more quadrate, posterolateral angles weakly produced; scutellum reduced, less swollen, with a furrow behind anterior margin; wings abbreviated, apices squared off, reaching only to posterior margin of abdominal segment III.

*Discussion.* The type series was taken from beneath large rocks in the cold, rushing waters of Gurakor Creek just upstream from the Wau road bridge. A similar habitat prevailed at the Wampit River locality, with the insects found in great numbers among the rocky, interbraided river channels of this mountain stream. We know this species only from these two localities, both of which are in the same drainage system in the upper Markham River catchment. La Rivers (1971) listed specimens of *T. longiceps* from Gurakor Creek; we have not examined this material but suspect that it may represent *T. froeschneri*. Our collections at this locality did not produce any examples of the former species, while the latter was abundant, in company with *T. usingeri* La Rivers, a pattern repeated at the Wampit River. By contrast, in the Bulolo River at Wau, *T. longiceps* was abundant, again in company with *T. usingeri*, but *T. froeschneri* was absent.

*Etymology.* This species is named in honor of Richard C. Froeschner, who has made valuable contributions to our understanding of hemipteran systematics.

*Holotype*. ♂, allotype ♀: PAPUA NEW GUINEA, **Morobe Province**, Gurakor Creek, along Wau Rd, September 15, 1983, CL 1814, J. T. and D. A. Polhemus (BPBM).

*Paratypes*. PAPUA NEW GUINEA. **Morobe Province**: 11♂♂, 16♀♀, 15 nymphs, same data as holotype (JTTC); 32♂♂, 29♀♀, 4 nymphs, Wampit River, 10.7 km N of Mumeng along Wau Rd, September 19, 1983, CL 1833, J. T. and D. A. Polhemus (JTTC).

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#### LITERATURE CITED

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